

U.S. Patent Application Serial No. **10/649,744**
Amendment filed March 14, 2007
Reply to OA dated December 15, 2006

REMARKS

Applicants gratefully acknowledge the allowance of claim 1.

Claim 2 has been amended in order to more particularly point out, and distinctly claim the subject matter to which the applicants regard as their invention. The applicants respectfully submit that no new matter has been added. It is believed that this Amendment is fully responsive to the Office Action dated **December 15, 2006**.

As now amended, claim 2 is to a limiting current type oxygen sensor that has a patterned cathode layer, a patterned anode layer, a patterned solid electrolyte layer disposed in between one surface of the cathode layer and the anode layer, a patterned gas barrier film, and a plane porous diffusion layer for controlling a gaseous diffusion rate disposed on the other surface of the cathode layer. The cathode layer has a bonding pad portion for connecting electrically with an external lead wire, with a part of the bonding pad being covered with the solid electrolyte layer, and the other part of the bonding pad being exposed to an atmosphere of the sensor. The patterned gas barrier film is disposed on the exterior surface of the bonding pad and on the exterior surface of the patterned solid electrolyte layer at a boundary between the part of the bonding pad being in contact with the patterned solid electrolyte layer and the other part of the bonding pad exposed to the atmosphere, and at surroundings of the boundary. Such an arrangement of a limiting current type oxygen sensor is not taught or suggested in the prior art.

U.S. Patent Application Serial No. **10/649,744**
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In the Office Action, Claim 2 has been rejected under 35 USC 103(a) as obvious in view of a combination of the teachings of Suzuki et al. (U.S. 5,814,719) and either Bhagat et al. (U.S. 4,668,374) or Kojima et al. (U.S. 6,007,688). Reconsideration and removal of this rejection is respectfully requested in view of the present amendments to Claim 2 and the following remarks.

In the Office Action, it is stated that Suzuki shows a limit current sensor that has a patterned cathode layer (2), patterned anode layer (4) and patterned solid electrolyte layer (3) therebetween, and a porous diffusion layer (1). In Fig. 3, a portion of the cathode layer (2) (left end) sticks out from the solid electrolyte layer (3) and is exposed to the gas environment. This exposed portion is said by the Office Action to read on the present claimed bonding pad portion.

The Office Action admits that Suzuki does not teach use of a patterned gas barrier film, but alleges that the Bhagat (col. 13, lines 22 - 33) and Kojima (col 9, line 23 - 32) references both teach the use of such a film and that it would be obvious to cover the bonding portion of Suzuki with a patterned gas barrier film such that the bonding portion does not serve as an electrode, and that one would be motivated to place a gas barrier at the boundary portion.

U.S. Patent Application Serial No. **10/649,744**
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In Bhagat, the embodiment of Fig. 10 shows a sensor having a silicon nitride layer (93) provided over a platinum electrode (90) in contact with an electrolyte (70) at the boundary of the electrode, while in Kojima the embodiment of Fig. 7 show an electrode (87) covered with a porous protective layer and a lead portion of the electrode (not shown) covered with a protective layer (92) having no ventilation property, such as alumina.

Applicants have amended Claim 2 (and see Fig. 9A) to provide that the patterned gas barrier film is disposed on the exterior surface of the bonding pad and on the exterior surface of the patterned solid electrolyte layer at a boundary between the part of the bonding pad in contact with the patterned solid electrolyte layer and the other part of the bonding pad exposed to the atmosphere, and at surroundings of the boundary, a feature not taught or suggested in the cited references.

In view of its present amendments to claim 2, and the above remarks, Claim 2, in addition to Claim 1 is believed to be patentable and early action towards allowance thereof is respectfully requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact the applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

U.S. Patent Application Serial No. **10/649,744**
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In the event that this paper is not timely filed, the applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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